



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,662	07/13/2001	Yasuhito Inagaki	09792909-5081	5976

26263 7590 06/06/2005

SONNENSCHN NATH & ROSENTHAL LLP
P.O. BOX 061080
WACKER DRIVE STATION, SEARS TOWER
CHICAGO, IL 60606-1080

EXAMINER

KORNAKOV, MICHAEL

ART UNIT PAPER NUMBER

1746

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905,662

Applicant(s)

INAGAKI ET AL.

Examiner

Michael Kornakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,8-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 and 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,8-13,18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 6,8-16 and 18-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' election of species as per the instant claim 19 in the reply dated 03/29/2005 is acknowledged. Claims 6, 8-16, 18-22 are currently pending. Claims 14-16, 20-22 are withdrawn from consideration as being directed to a non-elected invention(s). Claims 6, 8-13, 18, 19 are examined on the merits.
2. The previous rejections over Verhaverbeke et al (U.S. 6,261,845) and over JP8-334461 are withdrawn in view of Applicants' amendment, dated 11/22/2004.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 6, 10, 12, 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Knotter (U.S. 6,497,238).

Knotter teaches a substrate cleaning apparatus comprising a cleaning bath (4), containing an aqueous processing solution of hydrofluoric acid (HF) in water, which solution is provided with a basic component, such as ammonium fluoride (NH_4F); means for measuring/monitoring conductivity of the solution (14); container and supply line (8,11), for supplying another basic component such as ammonium hydroxide (reads on "aqueous ammonia", as instantly claimed) to the cleaning bath; control means (15) to carry out a corrective action in order to bring the monitored conductivity to approximately about the desired conductivity at the time intervals during the wet treatment by adding the basic component, such as ammonium hydroxide to the cleaning bath.

Regarding the limitation of claim 6, which is concerned with "measuring the characteristic, being relative to the hydrofluoric acid concentration of said cleaning liquid" and the limitations of claims 12 and 18, reciting "measuring hydrofluoric acid concentration of said cleaning liquid", Knotter teaches maintaining the concentration of fluoride containing ionic component in the processing solution at certain steady level by correlating the content of fluoride containing ionic component with conductivity of processing solution. Knotter specifically indicates that hydrofluoric acid contributes to the monitored conductivity (Fig. 1; col.4, lines 20-41; paragraph, bridging col.4 and 5; col5, lines 11-13, 23-26). Because the conductivity of aqueous processing solution is a linear function of the concentration of chemical component(s) in the solution and HF represents a strong electrolyte, the conductivity measuring means of Knotter are fully capable of measuring/registering the concentration of hydrofluoric acid in aqueous solution based on measured values of conductivity of such aqueous solution.

Thus, all the structural limitations of the apparatus as instantly claimed are explicitly or inherently met by Knotter.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 8, 9, 11, 13, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knotter (U.S. 6,497,238) in view of Larsen et al (U.S. 5,389,524).

While teaching electrical conductivity means for measuring and correcting concentration of fluoride containing component in aqueous solution, Knotter remains silent about the variety of other analytical means for measuring concentration of fluoride containing component in aqueous solution, as recited in the instant claims. However, the variety of recited means represent different conventional analytical techniques/instruments, utilized for the same purpose, namely for quantitative

Art Unit: 1746

determination/monitoring a concentration of chemical component in a liquid medium, which is also evidenced by Larsen.

Larsen teaches that any parameter, which is a function, preferably a simple function such as a linear function, of the **concentration** of chemical component in the liquid medium can be utilized for quantitative determination of such component. According to Larsen, this parameter is an optical or electrochemical parameter. Preferred optical parameters are those conventionally used in the fields of colorimetric, spectrophotometric, fluorimetric, phosphorimetric, turbidimetric/nephelometric or refractometric methods of analysis, especially transmitted light intensity (transmittance), absorbance or refractive index. Preferred electrochemical parameters are those conventionally used in the fields of potentiometric, conductimetric, amperometric, polarographic, voltammetric or coulometric methods of analysis, namely potential, current, resistance and conductivity (col.6, lines 21-43).

Thus, Larsen recognizes equivalency in applying different analytical techniques for the same purpose. However, it is well settled that substitution of equivalent techniques requires no express motivation, as long as the prior art recognizes equivalency.

Therefore, one skilled in the art would have found obvious to utilize any other analytical technique and respective means for implementing such technique, as provided by Larsen for measuring concentration of fluoride containing component in aqueous solution in lieu of means for measuring conductivity of aqueous processing solution in the teaching of Knotter with the reasonable expectation of success and thus to arrive at the limitations as instantly claimed.

Conclusion

9. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Kornakov

Michael Kornakov
Primary Examiner
Art Unit 1746

06/02/2005